Subject to the Approval of the Task Force

SENATE AND HOUSE OF REPRESENTATIVES
STATE OF IDAHO

BIOTECHNOLOGY TASK FORCE

House Majority Caucus Room 311, State Capitol, Boise, Idaho
July 27, 2005

MINUTES

The meeting was called to order at 9:30 a.m. by Cochairman Representative Doug Jones. Other committee members present were: Co-chair Senator Gary Schroeder, Senators Hal Bunderson, Chuck Coiner, Russell Fulcher, and Bert Marley, and Representatives Darrell Bolz, and Nicole LeFavour. Representatives Ann Rydalch and Frank Henderson were absent and excused. Staff members present were Maureen Ingram and Susan Bennion.

Others in attendance were: Megan Ronk and Kent Kunz, Office of the Governor; Karl Tueller, Jeff Viano, Karen Lewis, and Julie Howard, Office of Science and Technology, Idaho Department of Commerce and Labor; Rachel Hall, U.S. Department of Energy and Idaho Office of Science and Technology; Wayne Hoffman, Idaho Department of Agriculture; Michael Laskowski, University of Idaho; Philip Syrdal, BioIdaho; Nathan Bentley, Information Technology Resource Management Council; and Eldon Wallace.

Co-chair Representative Jones called the meeting to order at 9:30 a.m. and invited members of the task force and others in attendance to introduce themselves. **Representative Jones** introduced Legislative Services Office staff members Maureen Ingram and Susan Bennion. The chairman congratulated Mrs. Bennion on her impending retirement and recognized her 36 years of service to the Idaho Legislature.

Representative Jones said Idaho did not have an organized effort in bioscience until the last year or two. The task force will learn what is currently happening in our state agencies, private industry, research communities, universities, and laboratories, and look to see what can be done to facilitate that industry into the future, whether it be to create needed legislation or to change or remove existing legislation which may be a stumbling block. The task force may, in the absence of needed legislation, submit recommendations to the next session of the Legislature.

Co-chair Senator Gary Schroeder added that the state should look to see what might be done in the area of public policy to interface with research institutions, private and public industries, to help facilitate what they want to do.

Ms. Megan Ronk, Policy Advisor, Office of the Governor, expressed appreciation for the opportunity to share information with the task force. She said throughout his administration Governor Kempthorne has recognized the importance of science and technology in Idaho's

economy. In 1999, through Executive Order, Governor Kempthorne created the Science and Technology Advisory Council. This council, under the leadership of Dr. Billy Shipp, former INEEL President and General Manager, created a strategic plan for the state for developing and strengthening Idaho's technology industry. The council developed the following vision for Idaho: (1) Idaho will have and be recognized as having a vibrant technology-based economy that provides employment opportunities and high-wage jobs for Idaho citizens; (2) increase emphasis on the application and use of science and technology in Idaho; and (3) continue to spawn new companies and industries while contributing to the global competitiveness of traditional industries.

Ms. Ronk said the members of the council include many high-level representatives from industry, institutions of higher learning, and government department heads and staff. Accomplishments of the council include statewide leadership for science and technology efforts, partnerships among INL, industry, universities and state government, an increased supply of technically-skilled workers in the state's work force, and provided assistance in the start-up of emerging companies throughout the state. Ms. Ronk said this last year the council has also developed the state's core competencies - some of the key sectors where there are many opportunities to define, refine, and continue to enhance our science and technology industry. One of those core competencies is biosciences.

Ms. Ronk said in 2003, through the Governor's leadership, the council launched Idaho's TechConnect offices. Right now there are three offices throughout the state - Nampa, Idaho Falls, and Post Falls - that aid and assist emerging companies that are looking for support in developing their business plan and supplying funding for getting their businesses off the ground. As of the present time, the TechConnect offices have assisted more than 300 companies throughout the state. Even though these companies are not all exclusively biotechnology or bioscience companies, there is a bioscience effort in each of the companies.

Ms. Ronk continued that in 2004, Governor Kempthorne, during his State of the State address to the Legislature, announced his plan to create the Office of Science and Technology within the newly merged Idaho Department of Commerce and Labor. Mr. Karl Tueller was appointed as Executive Director, and currently there are four full-time staff who work solely on efforts to support and develop Idaho's science and technology industry. To continue this momentum, in 2005, the Governor proposed a new position to be added within the Office of Science and Technology - a position to support the Small Business Innovation Research (SBIR) program.

Ms. Ronk said the federal government has over one billion dollars available for companies that are involved in research and development efforts, and traditionally Idaho has not fared well in competing for these research dollars with other states across the nation. SBIR staff works with Idaho companies to help them create solid proposals and submit grant applications in order to bring more federal research dollars into Idaho.

What does the future hold? **Ms. Ronk** said in order to continue to be successful, the Science and Technology Advisory Council must continue to build, attract, and retain a highly skilled and technical workforce, invest in research and development, promote university-industry collaboration, help facilitate the commercialization of technology developed in Idaho, foster an entrepreneurial

climate that nurtures new firm formation, and establish a national image for Idaho as a leading technology center. She said Idaho must continue to build a national reputation.

Mr. Wayne Hoffman, Special Assistant to the Director of the Department of Agriculture, said these are exciting times in the Agriculture Department. Everyone recognizes that agriculture is one of the state's older industries, but they are seeing that agriculture can be much more than what it currently is. The department has been dabbling in biosciences for years - most everyone is aware of the concept of round-up ready crops; i.e., crops with certain genetic enhancements so they are insect resistant. There are new stories coming out on a routine basis of the innovations that are being found such as eating a tomato or a potato and suddenly you're vaccinated against the flu. Arizona State University is testing Hepatitis B vaccine contained within potatoes; Washington State University is looking at more Vitamin A and proteins in potatoes; North Carolina has 75 acres of rice planted that has been genetically engineered to produce the proteins found in human milk, saliva, and tears, with the idea that this protein can be put into granola bars or other drinks to help infants in the Third World.

Mr. Hoffman said many things that are taking place in agriculture biotechnology are potential uses for Idaho commodities. It would add value to our crops and perhaps even result in higher paying job opportunities for Idahoans. All this is happening with one major observation in mind - the world will need a 60 percent increase in farm output by the middle of the 21st century in order to accommodate a growing population. Idaho agriculture has a role to play in this, and they are prepared to play that role. There are still unknowns. Recently the U.S. Department of Agriculture Advisory Committee released a report that honed in on the single fact – the need for more supplies to meet the world demand. They don't know what agriculture is going to look like in 10 or 50 years, how agriculture land use will change in the coming years, how accepting consumers are going to be of genetically modified food, or how the political and regulatory climate will change.

Mr. Hoffman said to do their part, Idaho's Department of Agriculture is launching a biotechnology task force, the sole charge of which will be to look at whether or not there are any regulatory roles for them to play. Idaho is a big seed-producing state, and given that fact we might need to protect the industry that already exists here. The U.S. Department of Agriculture Advisory Committee recently presented three scenarios as far as what the future holds: (1) The "rosy" scenario. They suggest that if possible in 10 years bioscience research will have advanced beyond what anyone could have imagined, and we'll see crops with increased yields; disease, insect, and drought resistance are commonplace; crops that are engineered for new energy and health uses, all readily accepted; and there will be a huge variety of agriculture commodities throughout the country. (2) The "middle ground" scenario suggests that some countries will accept biotechnology and some will not. There is no real standard around the world; and (3) The "niche" scenario. Fads will come and go but little will be sustained. Obviously the real question for policymakers is what is the place for this biotechnology in Idaho agriculture, and how do we stay competitive with other states? How do we shape public policy to match what's taking place and what best benefits Idaho's citizens?

Mr. Hoffman stated that several states have developed initiatives that have peaked his interest: Arkansas passed a series of tax credits in 2003 to encourage the creation of jobs and economic

development by firms engaged in commercial biological research. Agriculture, food, biotechnology, bioengineering, life science and business sectors were specifically targeted in the legislation. Colorado extended its advanced technology fund to include funding research and technology transfer activities in the area of biotechnology and other advanced technology throughout the state. Iowa has several examples of what they have done in recent years such as value-added agriculture products and process financial assistance programs. This provides financial assistance to agriculture, biotechnology, biomass, and alternative energy industries. Massachusetts passed a merging technology fund that is used to make investments, stimulate new research and development, and leverage private financing for research and research facilities. There is a job and incentive tax credit component to that as well.

Mr. Hoffman said the most recent legislation he has seen is from the state of Washington. In their last legislative session they created a $350 million life sciences fund with the money to be used for biomedical and agricultural life science research. This money comes from their tobacco settlement fund. Supporters of this fund suggest that by using matching federal and private money, they will have a billion dollar fund by the year 2017. Policymakers around the country are also looking at what they can do in the use of biofuels. At the Department of Agriculture, Mr. Hoffman said there is a keen interest in biofuels. He said he has attended meetings where there were many discussions about the use of renewable fuels and how agriculture fits into that scheme. He said, if one looks around our state, there are many biomasses that can be used to general ethanol or biodiesel, and several companies in Idaho are interested in making the investment but they have found the "dollars do not quite pencil out." According to the National Conference of State Legislatures, 20 states have developed a renewable energy standard.

Mr. Hoffman said agriculture is a $4.4 billion cash industry, and this doesn't count the implement dealer, or the recurring economic effects of having farm land and farm communities that so define rural Idaho. The infrastructure is in place - farms, farmers, research facilities - and a growing livestock industry is looking for ways to harness the waste they create. Mr. Hoffman said there are many opportunities for agriculture and its connection to biotechnology. He said, "Here's a chance to take an existing industry with clearly defined roots in Idaho and redefine and enhance it. And the Department stands ready to help in this endeavor."

In response to questions, **Mr. Hoffman** said they have not had a discussion about being the lead agency on biotechnology. The Governor's office, in setting up the Office of Science and Technology within the Department of Commerce and Labor, recognized that there are many facets to the biotechnology discussion - and agriculture is only one component of that. The Department of Agriculture has a very close relationship with the Office of Science and Technology and the department indicated to that office they would like to play a bigger role in the discussion about agriculture, specifically biotechnology. Mr. Hoffman added that the Department of Agriculture hopes to take direction from the Executive Branch and the Legislative Branch as to what the Department will focus on in its role in biotechnology. He said there is so much happening, and the Department realizes they can't do everything and they need a focal point. With all the opportunities available, it's possible to spread the resources so thin that nothing is accomplished, but they are "surveying the landscape."

Mr. Karl Tueller, Deputy Director, Idaho Commerce and Labor, and Executive Director, Office of Science and Technology, stated he was excited to see the formation of this committee, and it is an illustration of the growing support they are getting from the Legislature and the Governor's office. He reviewed the importance of the Governor's establishment of the Science and Technology Advisory Council and its creation of a broad-based strategic plan.

Mr. Tueller said the mission of the Department of Commerce and Labor is very straight forward: create jobs, strengthen communities, and market Idaho. It has been clear for many years that the science and technology component has been the fastest growing segment of our economy. Science and technology covers a lot of areas in the process. He said the Office of Science and Technology has employed a great staff whose main goal is to strengthen the economy, and economic development is a key component.

Mr. Tueller said their strategic plan encompassed six strategies:

1. Build, attract, and retain a highly skilled workforce.
2. Invest in research and development and promote university-industry collaboration.
3. Facilitate commercialization of technology developed in Idaho.
4. Build an entrepreneurial culture that supports and nurtures new firm formation.
5. Invest in the infrastructure needed to support a technology-based economy.
6. Establish a national and international image for Idaho as a leading technology center.

Under these six strategies, there are twenty-six action items that guide and direct, through the Science and Technology Advisory Council, what is accomplished in the Office of Science and Technology. Two years ago they held a Science and Technology Industry Forum, and through this forum they were able to get the word out that there are a tremendous amount of resources in this state doing many great things. The emphasis was on industry, academia, and government networking and collaboration. A second forum was held in June of this year, and another is planned for 2006.

Mr. Tueller said identifying Idaho's four core competencies was done in two phases: Phase I identified Materials Science, Computer Science, Bioscience, Electrical Engineering, Geoscience, and Mechanical Engineering. In Phase II the following were identified: Ag/Bioscience, Imaging, Power and Energy, and Nanosciences and Materials. The new mission at Idaho National Laboratory deals with nuclear energy and power, and is considered to be the preeminent research and development lab in the world. It also deals with national security issues and other research components that cut across a wide variety of technology areas. Mr. Tueller said they are working to gain university and K-12 education support, and need to take advantage of the science, technology, and research coming out of our universities and community colleges.

Mr. Tueller said many other states are spending a great deal of money in areas of science and technology. We have capabilities and strengths with some resources now in existence and if we become better organized, make better utilization of what we have, and re-prioritize, we can make a significant difference. However, at some point, it's going to take some additional investment. He said agriculture is a wonderful model. They have built a tremendous infrastructure that has made

agriculture one of our leading economies in this state. We need to enhance the agricultural bioscience area with other technology areas to create the jobs for the future, and build an economy that pays for education. Agriculture used to be the leading economy in the state. That is no longer true, and we need to direct our resources to support that.

Mr. Tueller explained that the Office of Science and Technology helped to organize an entrepreneur workshop and events called Kickstart - initiated by Kickstand, a local group of 300-400 entrepreneurs in this valley. These small businesses and individuals were interested in enhancing our technology capabilities. They worked with the TechConnect offices and Boise State University to conduct three days of entrepreneurial events in Boise during April 2005. The Idaho National Laboratory supported it financially. There was another entrepreneur/start-up business competition called TechLaunch that held their second annual event in Sun Valley in July. One of the events held was college "commercialization" competition, and students from BYU Idaho, Idaho State University, and Boise State University participated in order that they may be better prepared for the future in the entire entrepreneurial effort.

Mr. Tueller explained TechConnect to the committee. The Governor recommended a budget last year of $300,000 for the state to be a partner in a network that is primarily funded now by the Idaho National Laboratory. There are three regional offices in the state and they are working on forming a statewide nonprofit entity to bolster these offices. The idea behind this is to help technology companies grow and expand and create new jobs for the future. He then explained the Small Business Innovation Research (SBIR). This is help small companies have access to, to research grants that will help their company grow, and it takes hands-on work by trained individuals to work with these groups. There are over $2 billion available annually for federal small-business research and development grants.

Mr. Tueller said in the first year they have been engaged in Venture Capital/Angel Support. They support the Boise Angel Alliance. There are high-wealth individuals in this company who want to invest in companies. Their board meets to review companies, and the office of Science and Technology provide staffing for them. Other events and forums they are involved in are Intermountain Venture Forum, TechLaunch, and the National Association of Seed and Venture Capital Fund conference. Expansion of Venture Capital/Angel Support is needed throughout Idaho and the next steps are to create investment incentives and tax credits.

Mr. Tueller said they measure whether whatever they are doing is creating a positive response. They used the Milken Institute report to evaluate criteria from other states in their technology efforts. Idaho ranked rather well:

4th in the nation in R&D expenditures on agricultural sciences per capita
4th in the nation for percent of B.A. degrees granted in science and engineering
7th in the nation for intensity of agriculture and food scientists per capita
10th in the nation for number of microbiologists per capita

But Idaho also is:

47th in the nation in competitive National Science Foundation proposals funded
47th in SBIR Phase II awards per capita
last in the region for R&D spending on physical sciences per capita
last in the region for R&D spending on biomedical sciences per capita

Mr. Tueller gave the committee a glance at ag/biosciences: biotechnology is a $54.6 billion industry worldwide; it spends more on R&D per employee than any other industry; 68% of soybean, 69% of cotton, and 26 % of corn planted is genetically modified; and approximately 60% of U.S. biotech firms have fewer than 50 employees, although some firms are very large and have a large number of employees; e.g., a pharmaceutical company. The percentage breakout of biotechnology activities is largely in the human health area - 68%; animal health, agriculture/aquaculture - 12% to 14%; environmental remediation/natural resource recovery applications make up 4% to 5%; with other activities being at 15%.

Mr. Tueller said the Office of Science and Technology recently participated in the Bio 2005 Annual International Convention - a convention with 18,679 attendees. Forty-eight states and sixty-one nations were represented. Idaho was represented at the Philadelphia convention by: OST; BioIdaho; Idaho Economic Development Association; Idaho National Laboratory; Boise State University; Idaho State University; and the University of Idaho. The 2006 convention will be in Chicago, and Idaho is seeking increased Idaho bio-industry participation, and participation by Idaho's Department of Agriculture.

Mr. Tueller said the Office of Science and Technology has been an integral partner with BioIdaho in terms of representing the public section in a private sector-driven initiative. In some ways, Idaho is further ahead in the bioscience area because we have an organization - the Idaho Bioscience Association. Additional Ag/Bio efforts to promote the industry are the Idea Network of Biomedical Research Excellence research conference at Idaho Northwest Nazarene University August 7-9, 2005. They are helping to initiate articles for Idaho *Business IQ* magazine, and they developed an Idaho biosciences story to launch a new "Tech" section. This story will be in the August/September issue.

Mr. Tueller said there is a large variety and a mix of universities, the Idaho National Laboratory, small companies, and large companies from around the state that are all involved in Ag/Biosciences. They are working to inventory all bioscience-related industries.

Senator Schroeder asked Mr. Tueller if he felt part of the role of his office was assisting to attract research dollars? If so, what have you done? What can this committee do to help you be more effective in that role? **Mr. Tueller** said there are several things they are doing to get financial and moral support and direction for small businesses:

The SBIR program that aids in receiving federal grant dollars.
Get a focus and prioritize. The university presidents and vice presidents of research have recognized and adopted the core areas of emphasis. That's the first time in state government they have had them. They have asked Mr. Tueller to serve on the Higher Education Research Council and work with them as they allocate their research

dollars. The emphasis and priority is going to be given to some of these targeted areas.

The Science and Technology Council is working on a recommended proposal that would encourage more state general fund money for the higher education research effort that may be targeted to the core areas to enhance and attract matching federal dollars.

The committee took a brief break at this time.

Co-chairman Jones introduced **Michael Laskowski, PhD, Director, NIH INBRE Program, University of Idaho**, to give a review of the 2004 Governor's Forum on Bioscience, the WWAMI medical program, and the BRIN/INBRE grant program. Dr. Laskowski said he has been doing research for 35 years and will retire in December to a part-time position of teaching and consulting. He has worked at five medical schools doing research. He came to Idaho in 1988 as Director of the WWAMI program, and in 2001 was given the opportunity to participate in a major health grant that has given Idaho an opportunity to build the future economic stability of the state, based upon biotechnology and biosciences.

Dr. Laskowski explained to the committee the history behind the startup of WWAMI and how the Legislature first became involved and appropriated funds. Currently 18 students per year have guaranteed seats at the University of Washington. WWAMI medical education has the first year program at the University of Idaho with basic science classes, and is a post baccalaureate program. The second year, students go to the University of Washington for clinical science classes. Now there are opportunities where a student can essentially spend their entire third and fourth years in Idaho, either in Boise or Pocatello.

Dr. Laskowski said although there is a need for specialists, primary care is the chief concern for WWAMI. The family practice residency program in Boise is a very successful program and is one of the most competitive programs in the Northwest. There is a family practice residency program at Idaho State University, again with a special emphasis in primary care. The third program is at the Veterans Administration in Boise, and that is primary care internal medicine. The VA is critical to medical education and research in Idaho, and he urged the committee to include the VA in all their discussions.

Dr. Laskowski said the return rate for the WWAMI program is 45%. What that means is that for every 100 Idaho students put through the program, 45 of them return. The national average is 42%. He said he has been asked many times at JFAC meetings if Idaho should have a medical school. He said there are two types of medical schools: one type becomes an economic engine for the state. If you look at medical schools like the University of Utah, University of Oklahoma, University of Washington, Oregon Health Science University – each of those has an investment from their state, and it ranges anywhere from eight percent of overall operations to thirty percent. That investment in the state comes back many times over through grant returns, contracts by physicians, patient care, and tuition. When you consider this kind of medical school, it becomes a driver for the economy. Dr. Laskowski said two examples of another medical school model are the University of North

Dakota and the University of South Dakota. In the 1960s, taking advantage of federal capitation for students, these two states changed their two-year medical school program to a four-year program. In the 35 years since then, neither of these has become an economic driving force in the state. He believes the reason was that they didn't have sufficient infrastructure to be able to sustain that economic force. It was designed to train medical students, to have some grant support, but it is still a net cost to the state.

Dr. Laskowski said since 1972 WWAMI has developed a gradual process of medical education. Will Idaho have a medical school in its future? He said he believes it will – he doesn't know when it will happen, maybe five, ten, twenty years from now – but when we consider investing in a medical school, we need to make sure that the clinical science infrastructure is in place first. There needs to be a major investment in research, and it will pay dividends. Have that infrastructure first, and then build the medical school on top of it.

Dr. Laskowski described the unique opportunity the National Institutes of Health (NIH) provided to Idaho and 23 other states, based on whether the state had a fair share of NIH grant dollars. These were competitive grants requiring the writing of a proposal that would be compelling enough to capture everyone's interest. The Biomedical Research Infrastructure Network (BRIN Program) was formed for this purpose. Dr. Laskowski said at first he thought it would be impossible for the three universities (University of Idaho, Idaho State University, Boise State University) to work together toward a common goal. However, it was clear that unless they did, they would not have a chance of getting the grant. Once they got the administrators out of the picture, the scientists got together and said, "If we want this, we have to work together" – and they pulled it off! He gave credit to two people for making this happen – Dr. Chris Daniels at Idaho State University and Dr. Julia Oxford at Boise State University. They put science before politics, and agreed that whatever resources were available would be split three ways, with no formulas involved. With that type of cooperation, it has been successful.

Dr. Laskowski said Bio-informatics is key to this. There are as many definitions of bio-informatics as there are practitioners of it, but an example would be the human genome project. Human genome has over 2 billion base pairs; 25,000 genes have been identified and over 100,000 proteins have been estimated to have been produced. Every one of those proteins has a three-dimensional shape. Why is that important? Because in order to target a protein for any one of many purposes - to stop the protein from being over-produced in cancer, to provide regeneration of nerves, to help out in treatment of Alzheimer's Disease, to be able to identify a drug-binding sight, you have to be able to picture that protein. That is a huge amount of information - the information of biology is bio-informatics. It is important to know how to deal with that information.

Dr. Laskowski described a statewide program that was developed for students, high school through graduate school, to learn about how bio-informatics will revolutionize their futures and to provide greater access to technology. Faculty have a training program on how to use it in their research and receive salary support for their technical expertise. We had good research facilities in the state of Idaho, but we had to make them state-of-the-art facilities to make us more competitive. Some of the $8 million dollars of BRIN grant money was put into research facilities throughout the state,

including the nuclear magnetic resonance and the microarray facilities at the University of Idaho, the proteomics facility at BSU, improvements to the animal care facility at the Veteran's Administration in Boise, and the molecular core facility at Idaho State University. Such investments are already generating revenue for those facilities.

Dr. Laskowski discussed the need for undergraduate opportunities. It was decided that the next generation of students in Idaho who are interested in the biosciences are the ones who should be filling our graduate programs; that we should create Idaho-grown, high-quality students. All the institutions in Idaho participated in the program which now has attracted 73 well-deserving, competitively-qualified students who each receive a stipend. These students are the next generation of researchers. As for faculty development, new startup grants were provided to recruit new faculty to our universities. The success: of the 23 new NIH grants received during the first three years of BRIN, 20 were supported by BRIN, which generated over $11 million of new money in two years. Idaho led the nation from 2001-2004 in the percent increase in new NIH support and Idaho doubled its NIH support in the same three-year period. This shows that we are at the top, and we need to capitalize on that.

Dr. Laskowski continued with other accomplishments by noting that 139 researchers, 44 graduate students, and 199 undergraduates have been supported by BRIN as of 2004, and the numbers have gone up. However, NIH has since changed the name of the program to INBRE, even though it is basically the same program, except for some important differences. The program now includes all of the colleges in the state, with emphasis on training to create a sustainable, trained workforce for the biosciences, and making sure there is a statewide research network among all the colleges. This is a very competitive program for which we asked $16.1 million dollars; we got every dollar we asked for. Credit is given to BSU, ISU and UI as well as the outreach steering committee comprised of representatives from BYU-I, NNU, Albertson's, CSI, NIC, and LCSC.

In response to a question, **Dr. Laskowski** said community colleges are a key player in this program. There are programs in biotechnology and an outreach program at CSI to educate the community on how important biotechnology is to our future; NIC has summer interns in industry and medical areas. This summer, BSU has students from every college in the state. The universities and colleges can no longer be individual "silos." To succeed, we need this network of colleges working cooperatively together, but the colleges need incentives to continue and support the collaborations.

One of the incentives is the NIH Lariat Program, an association of western INBRE states. NIH was approached by these states who were asking for financial help to support this original concept. NIH responded by requiring only a two-page paper describing the proposal, then rewarded the applicants with a $10 million grant to put Lariat into effect. The money is divided between seven states, and the goal is to provide communications between each of the states, with any point on the globe, and to make those communications seamless. It is critical that we keep up with our peers, meaning those people we want to aspire to, specifically the researchers at the University of California, Massachusetts Institute of Technology, and the University of Washington. High speed internet access is the future and we must make sure it happens.

Dr. Laskowski said over two years ago he and Mr. Philip Syrdal began a collaboration which resulted in the formation of BioIdaho. Mr. Syrdal's vision to create a better Idaho, the place to which he was retiring, came from the industry perspective and Dr. Laskowski's from the research/university perspective. BioIdaho is all entities with an interest in the biosciences: universities, colleges, national and state labs, industry, investors, law firms, individual entrepreneurs; it is not limited to venture researchers. BioIdaho helps Idaho by creating a critical mass in the biosciences; by attracting new industry from Idaho's existing infrastructure strengths; by attracting investment capital; by providing enhanced education, including stronger university faculties and facilities; and creating a vibrant entrepreneurial culture.

Dr. Laskowski described formative events which were a prelude to the Governor's Forum on Science and Technology held in June 2004. First, in order to determine Idaho's assets, research strengths, and exactly who is doing what, fifty-five top researchers in the state, working in a variety of fields, were convened in May of 2003. In two days, by listening to each other, everyone learned what everyone else was doing, and collaborative interdisciplinary links were formed among them. Then, business leaders, universities, scientists and government leaders were brought together in conference to consider forming a group to provide guidance in determining where bioscience and biotechnology in the state should go. Working groups were created to continue the discussions, and finally in May of 2004, BioIdaho was formed, with Mr. Syrdal elected as its first president.

Dr. Laskowski summarized the forum's work wherein Idaho's core competencies were identified. The six competencies are biosciences, computer sciences, electrical engineering, geosciences, material sciences, and mechanical engineering. In addition, there was a SWOC (strengths, weaknesses, opportunities and challenges) analysis for the competencies. The specific strengths in the biosciences revealed that while Idaho's agriculture is critical, there is much, much more. One general category is toxin-mediated and other infectious diseases including humans, plants and animals. This is a major strength that Idaho needs to build upon and which could direct our future. Other strengths are bioenergy and bioproducts; innovative technologies in food and agricultural production and value-added processing; and ecological systems research and management.

In conclusion, **Dr. Laskowski** put it altogether by reiterating that the role of WWAMI is more than educating the next generation. It's providing a step toward Idaho's first medical school, but only in its time and with a strong infrastructure. The primary goal of INBRE is sustainable biomedical research. The money from NIH which was invested, will end in 2009 and it is not known whether there will be another generation of grants. The question is, how will we use this opportunity that has been provided by NIH, to make our investments sustainable? Dr. Laskowski sees that the answer is jobs. He emphasized that we have to educate the workforce in our own universities, and that education is an investment in the next generation and in our economic future in the biosciences. In his seventeen years in Idaho, Dr. Laskowski has repeatedly heard that obtaining a higher education is a luxury, and that research is an afterthought. Such thinking has held Idaho down, but we now have the opportunity to make a strategic reinvestment. Research and education are the foundation for future economic development. Cooperation among the universities, and between the universities and industry is key to that economic development.

Mr. Philip Syrdal added that with Dr. Laskowski's retirement in December, Idaho will be losing a valuable asset. Dr. Laskowski thoroughly understands this field of research and how it works in Idaho, and how critical it is that the universities work together (historically a counter-intuitive mind set) to create the multiplier effect. He has contributed immeasurably to the state, to the medical program, and to individual students. We owe him a debt of gratitude.

In response to a question by **Senator Fulcher** inquiring about the infrastructure needed if the state is to have a medical school and one that can generate revenue for the state, **Dr. Laskowski** replied that the state must recognize the importance of, and make a commitment to heavily invest in higher education as well as research and development. Just how the investment will be made is also important. Will it be in dollars for the existing colleges, or in a free-standing research institute near Boise hospitals? Future discussions will revolve around making the commitment and deciding where to make the needed investments.

Following the lunch break, **Co-chair Representative Doug Jones** reconvened the task force and introduced the afternoon's speaker, Mr. Philip Syrdal.

Mr. Philip Syrdal, President, Idaho Bioscience Association (BioIdaho), began by giving a brief review of his background as a means to familiarize members with him personally and to provide an orientation to his perspective. From his beginnings in Pendleton, Oregon, and the Yakima Valley, he attended Whitman College and BYU, took summer programs at Harvard, and worked for twenty years in broadcast and print media. He was in the national publishing business in New York, then returned to the West taking a job with a medical center board in Seattle, WA. His experience there in chairing a committee to redesign the research center lead to the creation of a new design for the immunology and diabetes center laboratory. An initial private donation of $5 million is now a facility with a $60 million balance sheet. The lab has not only contributed to the research in this particular area but it has also contributed a great deal of knowledge to university programs and other programs working on such issues. In addition, they were able to "seed" relationships along with the Fred Hutchinson Cancer Research Center at the University of Washington, with bright, young immunologists who were willing to relocate to the center, funded by private laboratories, and intersect them to the universities and thereby begin to drive the culture in immunology.

Within a year, grant moneys primarily from NIH and NSF, had increased to $75 million dollars in the Puget Sound area. Approximately fifteen years after that, funding had reached $700 million, which shows the leverage that can be created when organizations work together.

Mr. Syrdal explained that it is important first to understand the way Idaho's research system works before wise investment decisions can be made that will bring more money into the state and before we can accomplish the goals we want to achieve. One's motivation for making these changes will control the type of decisions made. BioIdaho and the individuals who work with the association are determined to make a better life for their families and all Idaho citizens, and create an academic and research environment that will allow future generations of Idahoans to remain in the state and pursue their academic and research goals.

With that introduction, **Mr. Syrdal** invited the task force to view a fifteen-minute video presentation entitled "*Biotechnology: Knowledge Serving Life*." The video is an introduction to the world of biotechnology to show why it is important to our lives. The knowing "why" is a necessary precedent to making decisions on "how" to proceed in a chosen direction.

Mr. Syrdal said that the researchers' motivation is not money, but rather their motivations are pure. When they have hope, they have energy and are extremely productive. When they lose hope, they lose focus and direction. Unless they are fully engaged in a teaching job, many are instead looking for a research center, which puts them in a terrible spot. They are an unusual group of people, but you can get leverage untold from just motivating them; you can get things happening that you did not think could happen. This is one of the issues we have to keep in mind for Idaho. We have talented researchers in the state and we need to find ways to motivate them because at the moment, there aren't any motivators.

One point we need to keep in mind, **Mr. Syrdal** continued, when trying to put bioscience into perspective, is to remind ourselves why we are here, and appreciate how important it is to preserve and build upon those natural strengths that make Idaho so unique. For example, we have seed farmers on the task force who are successful because Idaho has a climate conducive to growing seeds, many varieties of them, with little disease because of the dry climate. In addition, with the available land we have, there are microclimate areas which are uniquely suited to growing new seed varieties without cross-contamination. Very few states in the country have these natural configurations. By carefully and responsibly developing new technologies, we can create more with what we have.

As we look at our opportunities from the "satellite view" of Idaho, referring to the relief map on the wall, it helps to remind us of the biodiversity we have in this state. Then when we return to the personal level, what is incumbent upon us to do? Where does our responsibility lie to make our state better and to use our land well? We have good assets that can be leveraged, we just have to do it in a different way in order to compete. BioIdaho is looking at all of this.

Mr. Syrdal said they started by looking at higher education and trying to understand why, from a research perspective, it appears to be rather dysfunctional. The most disturbing numbers from his perspective, are the small number of research grant dollars coming into Idaho from NIH where the available dollars, $28.5 billion, are six times larger than those from NSF. Two years ago, Idaho was fifty-first in the dollars allocated to states. Why do we get one-third of the biomedical dollars that Montana gets? Why aren't we developing our technology? It is time to find what our niches are and start competing.

The larger issue, according to **Mr. Syrdal**, is that Idaho with its incredible environment and unique biodiversity, is not keeping its top students in the state to develop our biotechnology. BioIdaho began to address the situation starting with university researchers to figure out what the problems are, which led to researchers giving their support and everyone talking the same language. The next level is to get the legislators and governor talking the same language; then we can accomplish something as a state.

Mr. Syrdal said that at this point Idaho does not have many biotechnology companies, but we do have a lot of people involved in biotechnology and bioscience in our agricultural companies which is our primary strength and these are the people doing the research. These companies rely heavily on research as does the independent farmer. The job of bioscience is how to do the job better.

The deeper, more critical issue is that of self-determination. Idaho is a state where the people want to determine what happens here. We do not want to be told; we don't want people who do not understand Idaho to be making our decisions. And yet, most of our effort at growing our economy is spent attracting outside companies to locate here and use our relatively inexpensive land, workforce and our assets. That puts us on the margin. Where do we get the plus value out of that? Part of this picture is that we have commodities in our universities, and yet we are "growing" and sending good researchers out of the state. The most important thing is, we have to keep that resource.

Mr. Syrdal said a primary focus of BioIdaho is to work with universities, starting with the University of Idaho, to figure out how to get bright students to come to Idaho, and how to keep these people and our home-grown ones in the state. We need to get them excited about what they can do in Idaho. How can we provide programs that have enough leverage nationally and internationally to attract and keep these students and future researchers? The answers require us to first look at how the infrastructure is put together in the state of Idaho.

Mr. Syrdal gave a review of his findings after having personally interviewed approximately 95% of the funded researchers in the public infrastructure of state labs and universities. The interview questions were more probing than merely recording names and titles. Researchers were asked such questions as: "What do you do well?; What are you excited about?; Who are you teamed with?; How is your funding?; What are you going to do next year?" BioIdaho now has a much better understanding of what our public assets are and where they are located. As an example, we not only have the bioenergy and alternative fuels research, but there is a whole new side stemming from our natural resources called extremophile research. We are producing industrial enzymes that are very unique with new colonies of little animals that live in these extreme environments. Their parasites and diseases are giving our researchers an opportunity to see models of human pathogens. We can analyze them without having to test humans or other animals. This has huge leverage for us because there is a lot of value in this kind of research.

Mr. Syrdal stated that in his hundreds of conversations with people at the Philadelphia convention, he learned that in general, people do not know anything about Idaho, or even where we are located. BioIdaho's magazine features this problem: How do you get here? Idaho is accessible and you can get here from anywhere.

Mr. Syrdal informed the committee that Idaho can offer what almost no other state can: in the area of water resources we already have some great hydrologists, most of whom are with the University of Idaho; we have a whole gamut of biology ranging from fish and game, through wildlife, to agriculture, infectious disease, fungi, and all the way to remediation, including one of the world's

most renowned programs of radioactive material remediation utilizing biological microbes. He said that the state even has "streamologists " who are studying various state habitats using data and records dating back 50 to 60 years. Why is this important? First, we are meeting what he believes is everyone's first and primary obligation: "To take care of our people and our land and to make sure that we have a good place to live." The second benefit is that all this knowledge is an exportable technology that countries such as China, India, Africa, and South America recognize they need to have.

Mr. Syrdal stated that it is critically important at this juncture to convince and recruit students with the necessary talent to come to Idaho, to complete their studies and stay in Idaho to work. But first, the universities must be convinced to stop acting like wardens in 6- foot ivory towers watching over 15,000 students. Instead, we should take our assets and put a program together where a student can become qualified academically and take internships in the field or at Idaho National Laboratory (INL). The possibilities are endless. Such a program could be designed so that personnel at INL could be given an affiliated professorship at one of the universities for the purpose of this program, but could also contribute to an internship to help interested students move into that field. Idaho could be number one in the world in water resource management and natural resource management, if we take the remaining steps necessary at the universities to make it a reality. Insofar as the costs involved, this is one of those areas that could easily be implemented for basically very little money, as the state already has most of the assets already in place. Except for solving the "politics of the matter," if this is all brought together and the problems solved, Idaho can be on a level to initiate the required leverage to produce transferable technology to the rest of the world.

Mr. Syrdal clarified that even if the exportation factor doesn't reach its full potential, if the state is producing a program that results in its being number one in the world in this arena, that factor alone fuels great incentive among the people involved. During the time he was involved in the corporate environment, it was his job to figure out what it was that his company did better than anyone else and what it could hope to supply to the world. In other words, "what is our reason for being and why do we come to work everyday?" If the people involved in any given field are given such a "reason to come to work" the outcome will be an energy that no one really realized existed. With a reputation for being number one in the world, numerous corporations will be flying in to figure out how to get access to the data, foreign countries will investigate and spread the word, and a positive snowball effect will culminate. Right now, one of our missing pieces as a state is that we are not creating the bonds and connections to make it happen. But these are the simple things that Idaho can do and can win and which will not cost a fortune. What is critical is the motivation of both the teachers and the students. Solving the politics shouldn't be that difficult. In fact, several researchers have already written impressive model curriculums. To succeed as a state, it is imperative to promote an atmosphere of innovation in the socioeconomic infrastructure. That is now beginning to happen.

Mr. Syrdal explained that if you want to be number one in the country or the world in a particular area, you seek out the brightest person in that area of expertise and bring them to your "shop," and when you do, you create instant credibility, and suddenly everybody around needs to rise to that same level. Researchers work that way, the state works that way, and any organization works that

way.

Mr. Syrdal talked about the constant process it is to secure necessary funding, and said it is no secret there are huge biases in the process of obtaining grant money. In order for the infrastructure to work in Idaho, it is critical to bring real credibility right into the middle of our talented researchers. The problem is one of convincing those at the national level. As an example, Idaho State University used the theory and brought five people with NIH funding to the university but each of the five lost their funding immediately after coming to Idaho and could not get their funding renewed. That happens because someone on the national level looks at the institutional characteristics this person is working in and the grant being applied for and questions whether the institution can support the grant. Does it have the necessary infrastructure? Does it have the necessary people on the microarray? Does it have the right kind of team to fill in the pieces? These particular researchers didn't necessarily have huge grants but they did have credibility and, still lost their funding. The mistake they made was not putting the "right" collaborators on the next grant application. The credibility issue on a national level is very interesting and difficult.

Mr. Syrdal said Idaho does have another infrastructure problem due to Idaho's geography and transportation system. It is separating our researchers and works against collaboration. If we can communicate better, we can get better funding. The majority of the state's research is being conducted in Moscow, Sandpoint, Coeur d'Alene, INL, and Pocatello; Boise is the "black hole." Fortunately, the current Boise State University president has the vision that a state will not succeed without a major market to attract potential recruits. While some might think this is a great place to live, there are others who will not necessarily agree. He said that this particular problem has often been told to him by other researchers, expressing their frustration at their inability to get good people to agree to move to the state. On a positive note, Idaho State University has already made about three really good hires this year in its bioscience department. That alone will provide them with the necessary leverage to benefit the university if these individuals can be retained. But, Boise has to offer something and, at the same time, the University of Idaho needs to connect with the rest of the state to leverage the great research already being done there. The University of Idaho has about 95% of the NIH dollars available with the remaining five percent being split between BSU and ISU.

Mr. Syrdal posed the question, "How do we solve this problem of being able to catalyze the biomedical industry?" At the Governor's forum, in committee discussions, and in private conversations with university researchers, the concept has arisen of building a biotech research center in Boise to be a primary connection to all the universities and various laboratories throughout the state. If such a facility could be built in Boise, it would prove attractive to core programs in other parts of the country. A biomedical/biotechnical research center in Boise makes sense, primarily for geographical reasons. We are in a position to do that now, especially with the airport in Boise to provide quick connections. He said he cannot overstate the importance of finding a way to get all these pieces working together to form critical mass. Without critical mass, each one of these researchers and his projects will wither on the vine. Right now, Idaho seems to be a state that raises up a great researcher; that researcher comes in as a post-graduate doctor and gets a teaching job at U of I, or the lab and, about the time he gets his program together, he has a world-class reputation. The next thing we know, he is in Nebraska. That is exactly what has happened the last two years,

costing the state another million dollars with $600,000 directly out of the U of I, when two top researchers left the state. We were so close, but a third researcher and his program also left the state to join with the other two in Nebraska where a core facility was built for their speciality in microbials. This example has been repeated far too many times and it has resulted in many of the faculty feeling that they cannot keep the really good people because, as soon as those people reach a certain level, somebody will recruit them out of state.

Mr. Syrdal reiterated that, "We've got to come to a realization of who we are, what our assets are, and how can we leverage those assets." And one of the great assets we have because of our natural environment and because we're going to do the work anyway, is in the area of infectious diseases. We're looking at infectious disease in wildlife, in fish, in plants, and in humans. These technologies interrelate and today the solutions to those problems are in the same kinds of laboratories. And they have the same kinds of researchers, people taking apart the proteins and the genes, looking at the resistance mechanisms. There are many who support the idea of putting a regional research center in Boise which is independent of the universities. Such independence is important because that center can bring in whomever they want without worrying about faculty pay and what level someone may be on compared to another and all the inherent politics of a university. Another advantage of an independent center is that you can attract independent researchers of real character and note of credibility nationally who see a new facility as a standing opportunity to create a program that is not impeded or infringed upon by a university and they are the kind of people that will then draw the researchers of the universities into a program and literally expand it dramatically.

In response to a question about how Idaho can get that kind of facility and attract those kinds of people without significant amounts of state money, **Mr. Syrdal** responded that it first has to be determined who benefits. In this case, the state would, so it would be in the state's interest to support it at some level. It might be of benefit to the federal government to have a regional center in the northwest; and the Veterans Administration might see it as an opportunity to make improvements in their facility. U.S. Senator Larry Craig , as chairman of the Veterans Administration Committee, could be contacted in this regard. The city of Boise has a great deal to gain and should be willing to provide some financial support. In addition, there are corporations and investors and donors, and INL who might also benefit and would probably be willing to help. The direct and indirect costs factor into the advantages to federal facilities and universities and others competing for grants. There are many ways to fund this; much depends on if we're all ready to stand together. This is just one idea on how Idaho could take advantage of and create more leverage with the resources it currently has.

Senator Bunderson suggested the Office of Science and Technology might take the lead in exploring this idea. The membership of the advisory board has a good mix of representatives from the universities and state government.

Representative Jones offered that agriculture is the area with perhaps the largest, immediate potential with our distinct microclimates which are isolated from each other, and agriculture may be the least expensive to develop because of the agricultural infrastructure that is already in place.

Following a short break, the task force continued its discussions. It was suggested that the task force have an update from the Idaho National Laboratory on what they are looking at right now and what role they would like to play in the future of Idaho's biotechnology. It was also suggested the next meeting could well incorporate university interests and the lab. Members are interested in learning what the universities think of having an independent laboratory located in Boise.

Senator Schroeder stated that from a public policy standpoint, we need to know what can we do to facilitate the interface between government and industry and to encourage the development of this kind of technology rather than hinder it. The last thing he wants to see developed is a regulatory bureaucracy which would be counterproductive to progress in this field.

Senator Fulcher commented this is such a broad area with great potential for so many positive outcomes, but it appears that we need to have very specific goals and preferably rank them in some kind of order. If we are going to be successful in pushing anything forward, we need to state what our number one objective is, and why. Hopefully, with success in the number one goal, we could move on to have similar success in the remaining goals.

Representative LeFavour said that she would like the committee to explore what other states may have done or may be doing to develop this area as well as possible model legislation that might be available.

Senator Schroeder said he feels it is also important to decide if the committee's main objective is to have the government create this process or are we looking at ways in which government can help facilitate private sector development through public policy? **Representative Jones** added that we could also look to see if there are laws put on the books years ago that are no longer useful or applicable and may even be impediments. Recommendations to remove them may be just as valuable or more so than creating new law. Industry can pinpoint impediments.

Senator Marley inquired about future meetings and the extent of the commitment of this task force in order to finish its business. **Representative Jones** offered that it seems reasonable to have two more learning meetings to gather information from the universities, the agricultural community and the labs, and then a final meeting to make any policy recommendations or to propose draft legislation if needed.

After clarification by **Mr. Syrdal** on the subjects that should be covered in two more informational meetings, **Senator Schroeder** asked unanimous consent that the task force have an informal understanding to have not more than two additional meetings for information and learning, and one final "action-type" meeting for recommendations.

After discussion, the task force set the date of the next meeting for Wednesday, **September 7, 2005**, and determined that a third meeting should be scheduled before the end of September.

The meeting was adjourned at 3:50 p.m.